

SUPPLEMENTAL MATERIAL

Supplemental Tables:

Table 1: Baseline characteristics of total study population

	CTO-PCI (n=148)	CTO-No PCI (n=154)
Age (years, mean, SD)	60 (\pm 10)	60 (\pm 10)
Men	131 (89%)	126 (82%)
Diabetes	22 (15%)	25 (16%)
Hypertension	59 (40%)	69 (45%)
Family history of coronary artery disease	66 (45%)	64 (42%)
Hypercholesterolaemia or on statin	51 (35%)	52 (34%)
Current smoker	77 (52%)	76 (49%)
Previous myocardial infarction	19 (13%)	24 (16%)
Primary PCI		
Infarct related artery		
Right coronary artery	46 (31%)	47 (31%)
Left circumflex artery	30 (20%)	43 (28%)
Left anterior descending artery	72 (49%)	64 (42%)
Stent placement	146 (99%)	154 (100%)
Drug eluting stent	88 (59%)	103 (67%)
Triple vessel disease (>70% stenosis)	62 (42%)	67 (44%)
MI Syntax Score II (mean, SD)	27 (\pm 8)	27 (\pm 10)
LVEF prior to randomization (mean, SD)*	41 (\pm 11)	42 (\pm 12)
CTO characteristics during primary PCI (adjudicated)		
Patients with multiple CTOs†	13 (9%)	22 (14%)
CTO related artery		
Right coronary artery	64 (43%)	78 (51%)
Left circumflex artery	48 (32%)	37 (24%)
Left anterior descending artery	36 (24%)	39 (25%)
Total J-CTO score (mean, SD)	2 (\pm 1)	2 (\pm 1)

Data are number of patients (%), unless otherwise stated. CK-MB=creatin kinase-MB isoenzyme. CTO=chronic total occlusion. J-CTO=Multicenter CTO registry of Japan. PCI=percutaneous coronary intervention. *Imaging modality is CMR only, data available in n=201 patients. † For patients with multiple CTOs, the CTO supplying the largest amount of myocardium was defined as the main CTO.

Table 2: Serial CMR outcomes: Recovery of global functional outcomes in the patients with a CMR at baseline and 1 year FU (A) and in the patients with a CMR at baseline, 4 month and 1 year FU (B).

A			
Total CMR population	CTO-PCI (n=35)	CTO-No PCI (n=40)	p-value
Left ventricular ejection fraction (%)			
Baseline	43.0 (10.5)	42.8 (9.8)	0.94
1 year FU	45.8 (9.6)	44.5 (11.4)	0.58
Δ LVEF	2.9 (10.5)	1.7 (9.6)	0.62
Left ventricular end-diastolic volume (ml)			
Baseline	199.1 (49.0)	207.0 (49.0)	0.49
1 year FU	192.7 (46.8)	203.1 (51.5)	0.37
Δ LVEDV	-6.4 (42.4)	-3.9 (32.7)	0.77

B			
Total CMR population	CTO-PCI (n=32)	CTO-No PCI (n=39)	p-value
Left ventricular ejection fraction (%)			
Baseline	42.8 (10.8)	42.7 (9.8)	0.95
4 month FU	48.8 (8.5)	46.8 (10.6)	0.37
1 year FU	45.4 (9.9)	44.2 (11.5)	0.64
Left ventricular end-diastolic volume (ml)			
Baseline	198.3 (49.8)	206.2 (49.5)	0.51
4 month FU	194.4 (42.9)	205.6 (46.3)	0.30
1 year FU	193.0 (47.8)	202.8 (52.2)	0.42

CMR= cardiac magnetic resonance, CTO= chronic total occlusion, FU= follow-up, PCI= percutaneous coronary intervention

Table 3: Prognostic factors for long-term MACE

Subgroup	n	MACE (%)	HR (95% CI)	p-value
Age				
< 61 years	158	11	Reference	
> 60 years	144	13	1.10 (0.57-2.12)	0.77
Gender				
Female	45	16	Reference	
Male	257	11	0.71 (0.31-1.62)	0.41
Diabetes				
No	255	11	Reference	
Yes	47	19	1.94 (0.91-4.11)	0.09
Culprit location				
Non-LAD	166	10	Reference	
LAD	136	14	1.44 (0.75-2.77)	0.27
CTO location				
Non-LAD	227	12	Reference	
LAD	75	12	0.98 (0.46-2.10)	0.97
Vessel disease				
2-vessel	173	12	Reference	
3-vessel	129	12	0.97 (0.50-1.87)	0.92
Baseline LVEF				
>40%	114	11	Reference	
<41%	87	10	0.96 (0.40-2.27)	0.92
Baseline LVEDV				
< mean	104	7	Reference	
>mean	97	14	2.20 (0.89-5.46)	0.09
SYNTAX score				
< mean	158	8	Reference	
>mean	144	17	2.31 (1.16-4.63)	0.02
CTO PCI				
No	154	12	Reference	
Yes	148	12	1.03 (0.54-1.98)	0.93

CTO=chronic total occlusion, LAD= left anterior descending artery, LVEDV= left ventricular end-diastolic volume, LVEF= left ventricular ejection fraction, PCI= percutaneous coronary intervention.

Table 4: Prognostic factors for long-term Mortality

Subgroup	n	Mortality(%)	HR (95% CI)	p-value
Age				
< 61 years	158	3	Reference	
> 60 years	144	11	3.74 (1.37-10.21)	0.01
Gender				
Female	45	11	Reference	
Male	257	6	0.58 (0.21-1.58)	0.29
Diabetes				
No	255	6	Reference	
Yes	47	15	2.94 (1.19-7.30)	0.02
Culprit location				
Non-LAD	166	7	Reference	
LAD	136	7	1.18 (0.50-2.77)	0.71
CTO location				
Non-LAD	227	5	Reference	
LAD	75	12	2.26 (0.95-5.35)	0.07
Vessel disease				
2-vessel	173	6	Reference	
3-vessel	129	9	1.53 (0.65-3.61)	0.33
Baseline LVEF				
>40%	114	4	Reference	
<41%	87	10	2.94 (0.90-9.54)	0.07
Baseline LVEDV				
< mean	104	1	Reference	
>mean	97	12	13.04 (1.70-100.30)	0.01
SYNTAX score				
< mean	158	4	Reference	
>mean	144	10	2.50 (1.01-6.20)	0.048
CTO PCI				
No	154	5	Reference	
Yes	148	10	2.07 (0.84-5.14)	0.12

CTO=chronic total occlusion, LAD= left anterior descending artery, LVEDV= left ventricular end-diastolic volume, LVEF= left ventricular ejection fraction, PCI= percutaneous coronary intervention.

Table 5: Clinical characteristics at 1-year follow-up

	CTO-PCI	CTO-No PCI
Functional and Anginal status		
Dyspnea status	(n= 140)	(n= 146)
No dyspnea/NYHA I	119 (85%)	125 (86%)
NYHA II	20 (14%)	17 (12%)
NYHA III	1 (1%)	4 (3%)
NYHA IV	0 (0%)	0 (0%)
CCS class	(n=141)	(n=149)
No angina*	132 (94%)	129 (87%)
Angina present	9 (6%)	20 (13%)
CCS 1	1 (1%)	5 (3%)
CCS 2	6 (4%)	9 (6%)
CCS 3	1 (1%)	6 (4%)
CCS 4	0 (0%)	0 (0%)
Unknown	1 (1%)	0 (0%)
Medication	(n=141)	(n=148)
DAPT	85 (60%)	92 (62%)
Aspirin	134 (95%)	143 (97%)
Clopidogrel/Prasugrel/Ticagrelor	89 (63%)	96 (65%)
Beta-blocker	121 (86%)	132 (89%)
ACE-inhibitor or ARB	118 (84%)	121 (82%)
Statin	130 (92%)	142 (96%)

Data are number of patients (%), unless otherwise stated. ACE=angiotensin converting enzyme. ARB=angiotensin-II-receptor blocker, CCS=Canadian Cardiovascular Society, CTO=chronic total occlusion, DAPT=double antiplatelet therapy, NYHA=New York Heart Association, PCI=percutaneous coronary intervention. *p=0.03.

Figures and Figure Legends

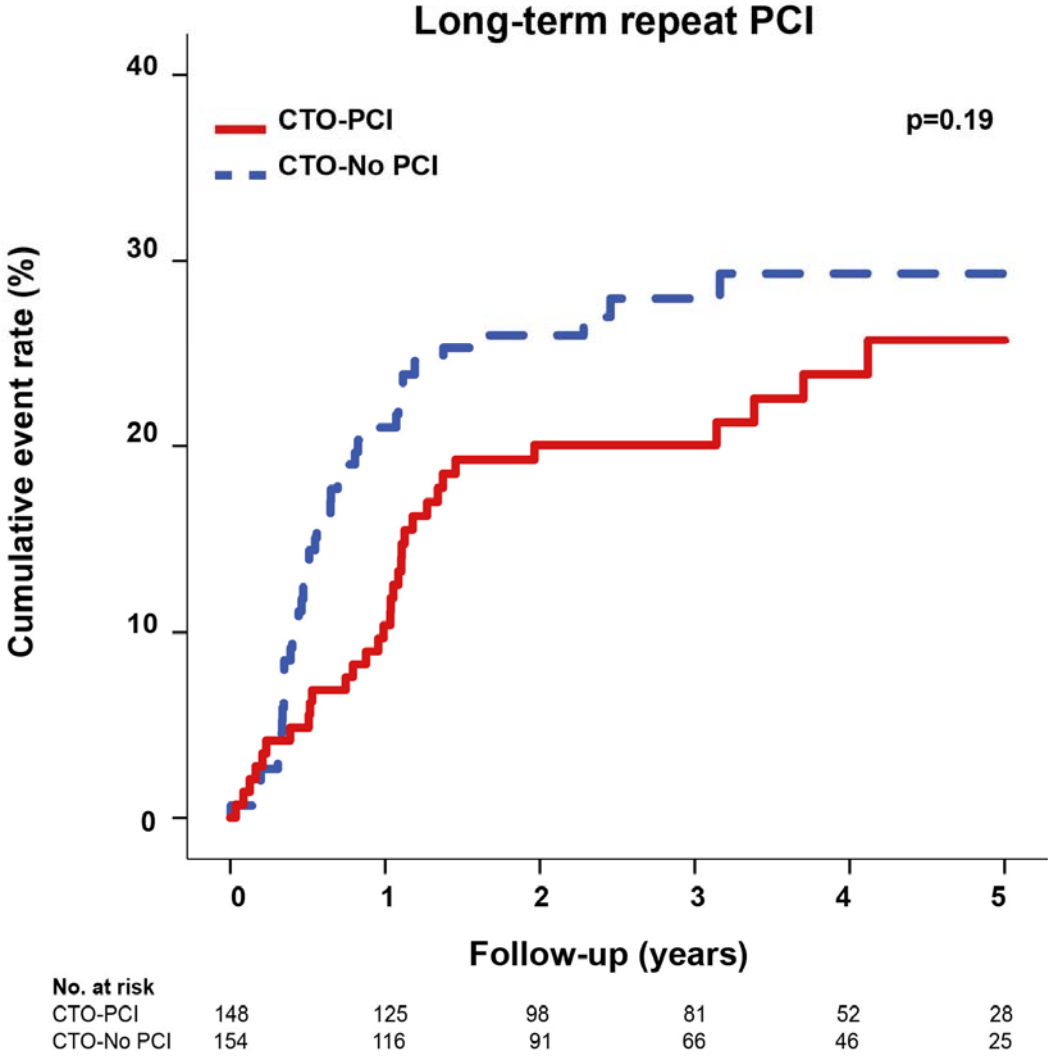


Figure 1: Long-term repeat PCI, comparing CTO-PCI versus CTO-No PCI. Kaplan-Meier estimates of the cumulative event rate of PCI. Analyses were performed on an intention-to-treat basis. CTO= chronic total occlusion; PCI=percutaneous coronary intervention.

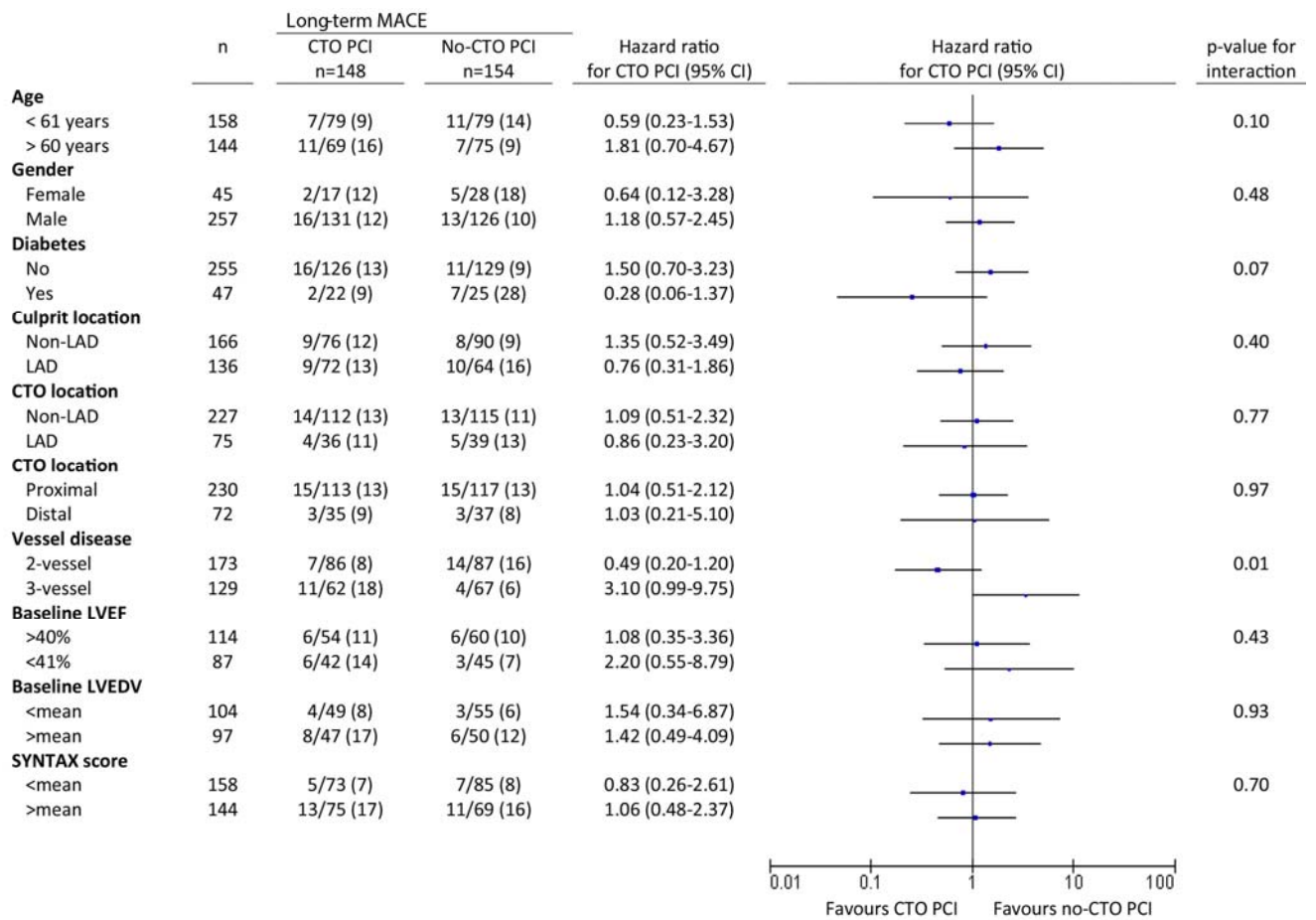


Figure 2: Forest plots of subgroup analysis for long-term MACE. CTO= chronic total occlusion; LAD= left anterior descending artery; LVEDV= left ventricular end-diastolic volume; LVEF= left ventricular ejection fraction; MACE= major adverse cardiac events; PCI=percutaneous coronary intervention; SYNTAX= The Synergy between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery.

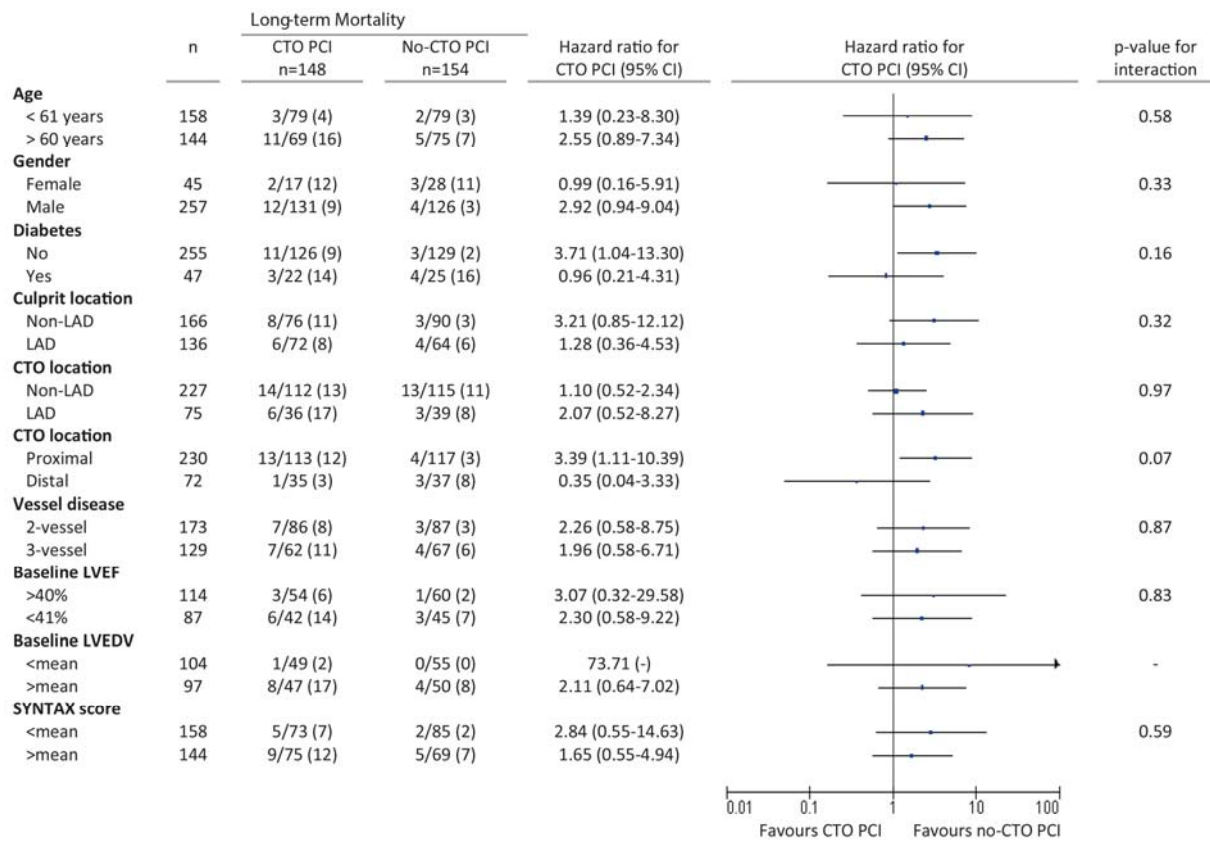
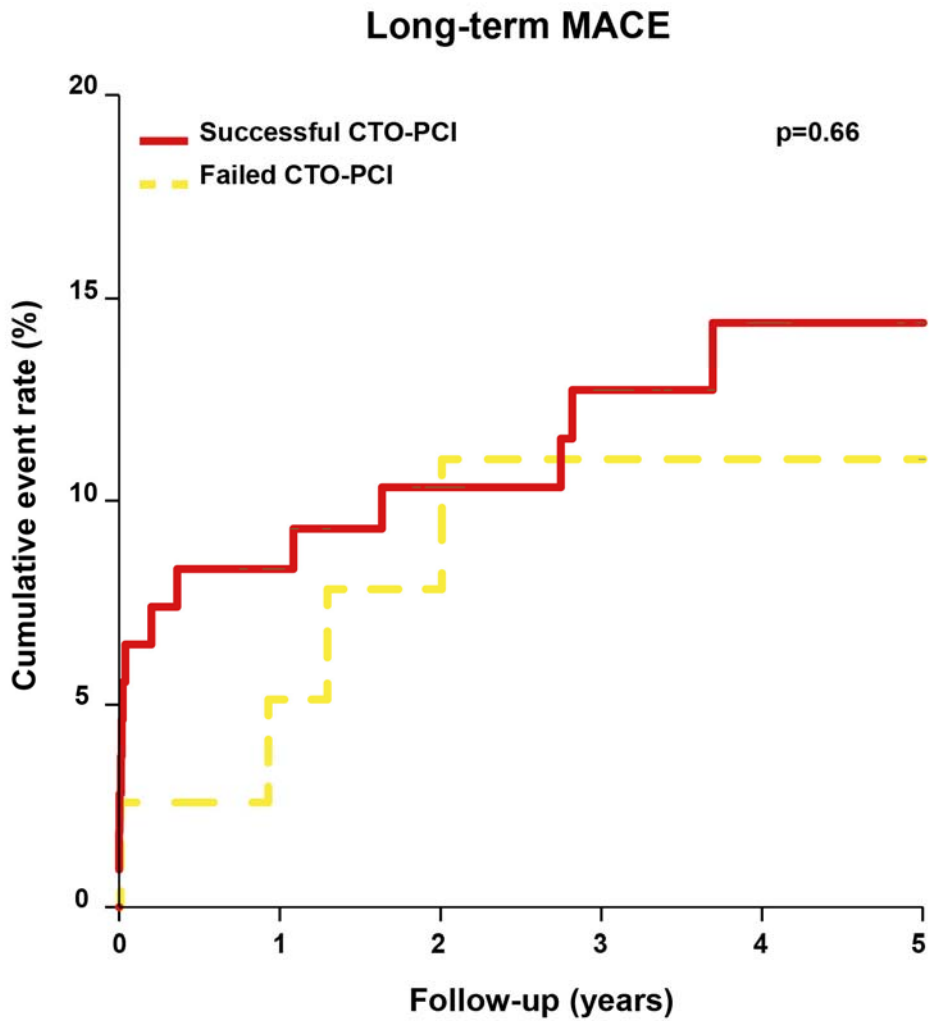


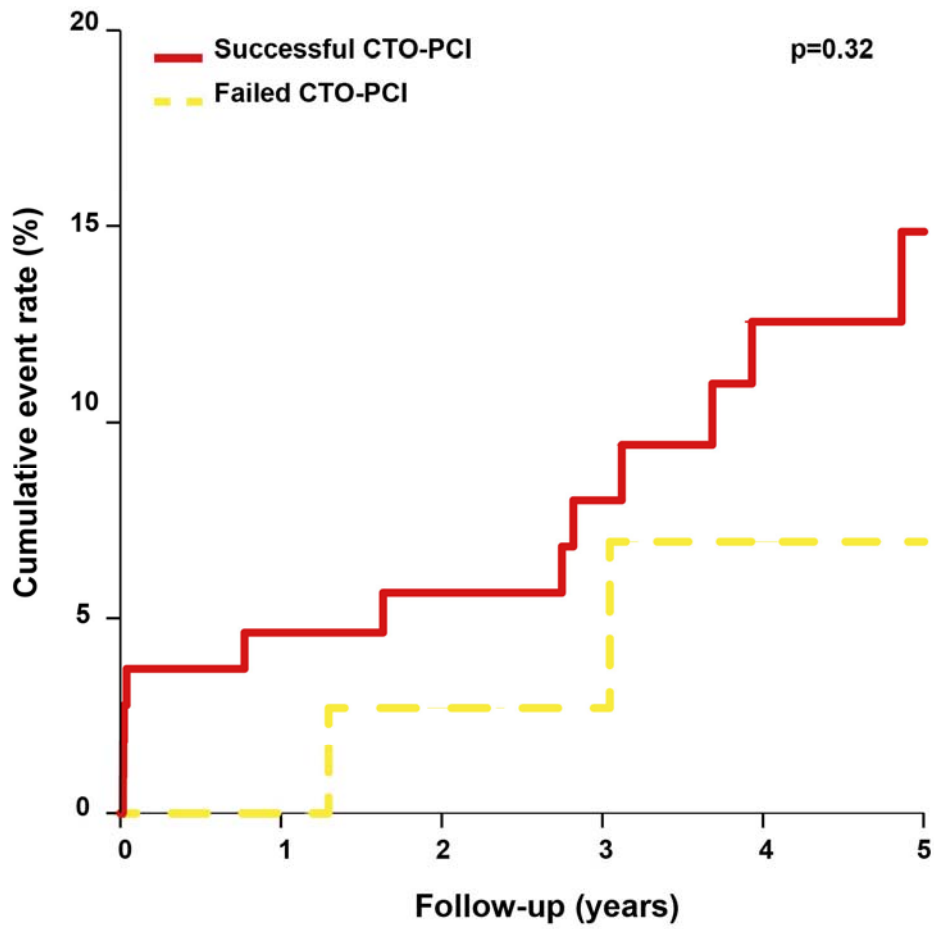
Figure 3: Forest plots of subgroup analysis for long-term Mortality. CTO= chronic total occlusion; LAD= left anterior descending artery; LVEDV= left ventricular end-diastolic volume; LVEF= left ventricular ejection fraction; PCI=percutaneous coronary intervention; SYNTAX= The Synergy between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery.



No. at risk	0	1	2	3	4	5
Success	107	95	84	71	51	26
Failed	38	36	30	23	17	7

Figure 4: Long-term MACE, comparing successful CTO-PCI versus failed CTO-PCI. Kaplan-Meier estimates of the cumulative event rate of the composite endpoint of MACE: cardiac death, CABG and MI. Core-lab reported success rate of CTO-PCI was 73%. CTO= chronic total occlusion; MACE= major adverse cardiac events; PCI=percutaneous coronary intervention.

Long-term mortality



No. at risk							
Success	107	100	90	76	57	29	
Failed	38	38	32	24	18	8	

Figure 5: Long-term Mortality, comparing successful CTO PCI versus failed CTO-PCI. Kaplan-Meier estimates of the cumulative event rate of mortality. Core-lab reported success rate of CTO-PCI was 73%. CTO= chronic total occlusion; PCI=percutaneous coronary intervention.